**CLAIMS**

What is claimed is:

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1. A method of channel balance for a channel balance section in an optical network with a starting node, an ending node and a plurality of intermediate add/drop nodes which further has a plurality of wavelengths, comprising steps of:

   determining express channels and non-express channels starting from said

10    starting node;

   for each said express channel:

   calculating a transmitter power change in said starting node that brings said express channel to a predetermined channel performance value;

   for each said non-express channel:

15    calculating a transmitter power change in said starting node for said non-express channel;

   for each said add/drop node:

   determining channels added via said add/drop node; and

   calculating a transmitter power change in said add/drop node for said

20    added channel.

2. The method according to claim 1 wherein the step of determining express channels and non-express channels is based on a wave path table.

25    3. The method according to claim 1 wherein the step of calculating transmitter power change for each express channels further includes determining the difference between the actual channel performance and said predetermined channel performance.

30    4. The method according to claim 1 wherein the step of calculating transmitter power change for each express channel further includes a linear relationship between transmitter power change and channel performance change.

5. The method according to claim 1 wherein channel performance is optical signal-to-noise ratio.

6. The method according to claim 1 wherein channel performance is channel power.

7. The method according to claim 1 wherein channel performance is bit error rate.

8. The method according to claim 1 wherein channel performance is Q value.

9. The method according to claim 1 wherein predetermined channel performance value is the average channel performance value of all express channels.

10. The method according to claim 1 wherein predetermined channel performance value is based on a user-defined output power spectral shape.

11. The method according to claim 1 wherein predetermined channel performance value is based on a user-defined output optical signal-to-noise ratio spectral shape.

12. The method according to claim 1 wherein channel balance for each said express channel is implemented as a multiple iteration process.

13. The method according to claim 1 wherein the step of calculating transmitter power change for each non-express channel includes setting new transmitter power equal to the mean value of the transmitter powers of two express channels adjacent to said channel.

14. The method according to claim 1 wherein the step of calculating transmitter power change for each added channel in an add/drop node includes setting new transmitter power equal to the mean value of the transmitter powers of two express channels adjacent to said channel.

15. The wave path table in claim 2 records for each channel its transmitter node and receiver node.

16. The determination of adjacent express channels in claim 13 is based on ITU wavelength frequency.

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17. The determination of adjacent express channels in claim 14 is based on ITU wavelength frequency.

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